



# THE HANFORD SITE

## Hanford Site 5-Year Plan

Ben Harp, Deputy Manager, Office of River Protection

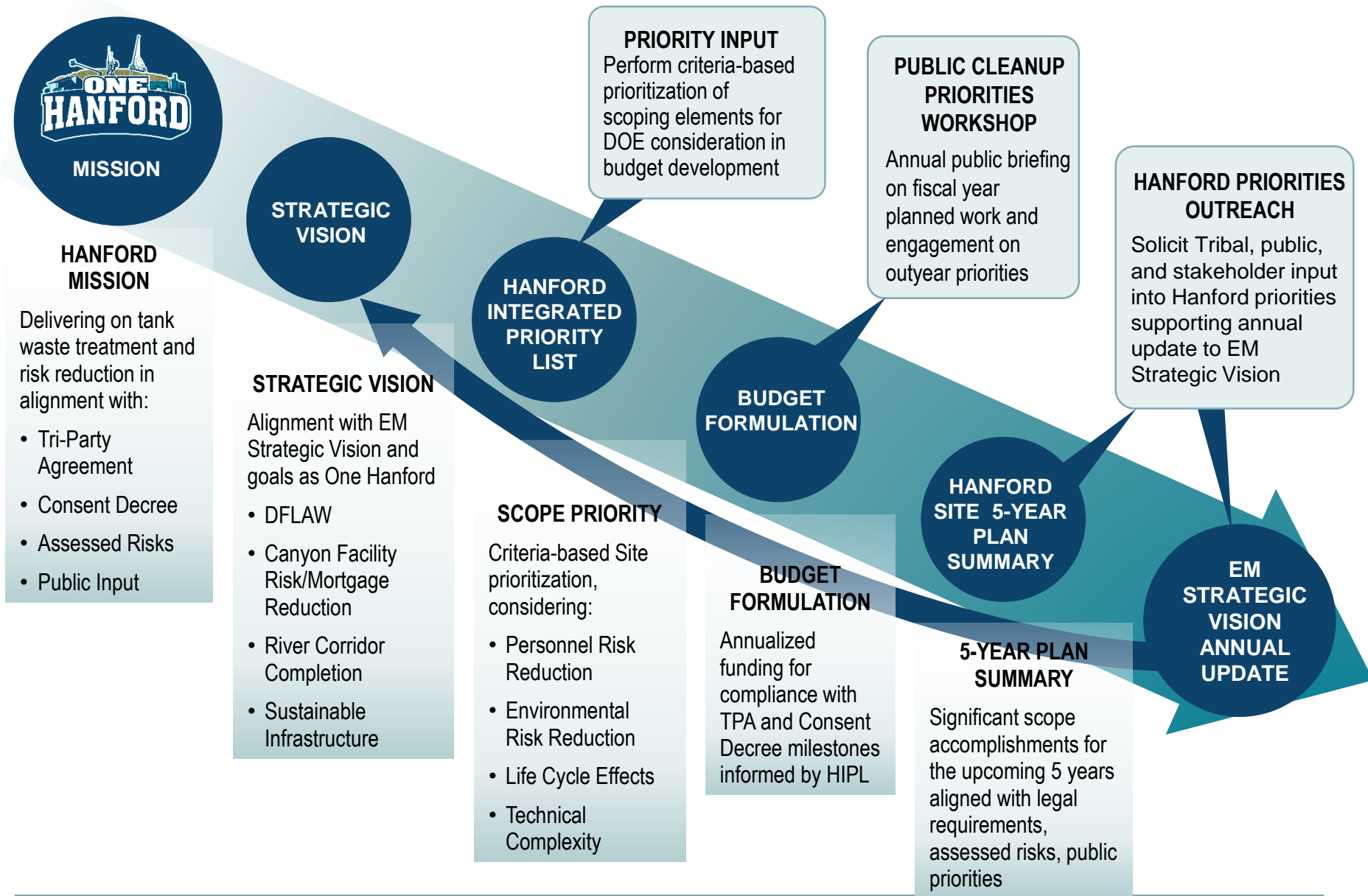
Brian Stickney, Deputy Manager,

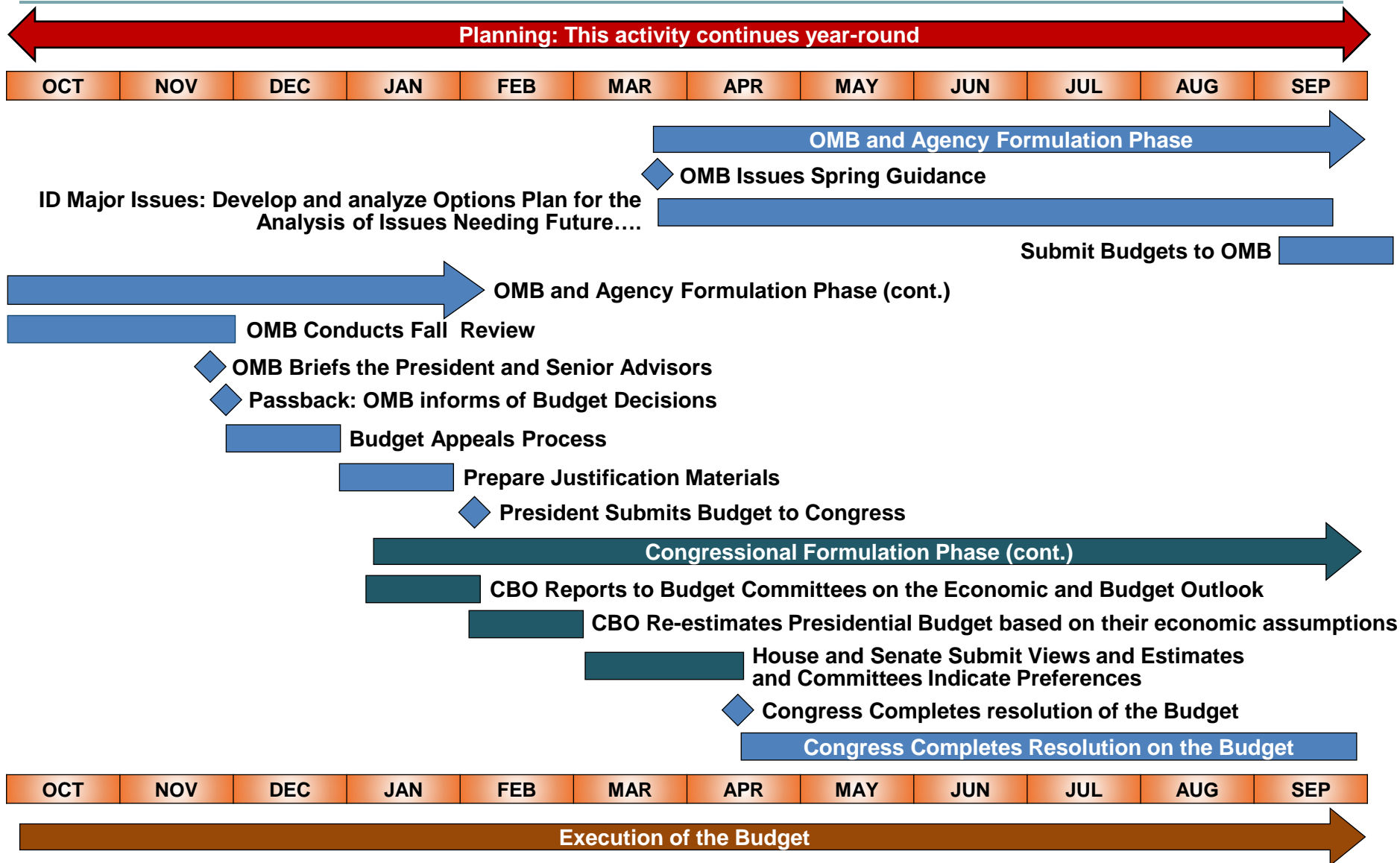
Richland Operations Office

*October 19-20, 2021*

- Reflects current Hanford Site goals and objectives relative to the three major cleanup components:
  - Tank Waste Cleanup
  - Central Plateau Cleanup
  - River Corridor Cleanup
- Outlines the cleanup work planned to be completed or initiated during fiscal years 2022 to 2026
- Provides performance status for prior fiscal year
- Aligns major accomplishment milestones for current and upcoming fiscal years based on previously submitted budget requests
- Projects major accomplishment milestones for out-years in alignment with budget targets
- Summarizes operational achievements for the next 5 years



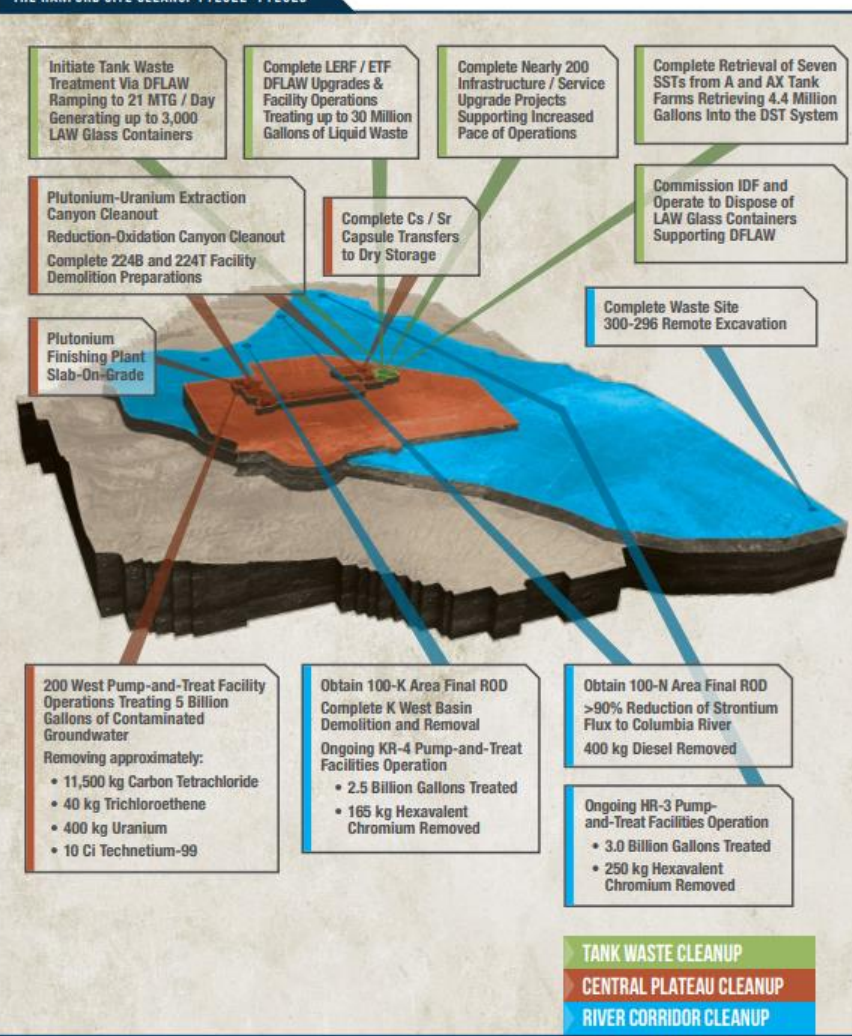




\*During OMB's Agency Formulation Phase, Budget Allocations are Embargoed and **NOT** Releasable Outside of the Administration



## THE HANFORD SITE CLEANUP FY2022–FY2026



<p><b>MINIMUM SAFE OPERATIONS</b></p> <p>Safely, securely and compliantly <b>MANAGE</b> Hanford's critical resources efficiently, including rejuvenated, reconfigured and right-sized infrastructure to reliably sustain the Hanford cleanup mission. <b>MAINTAIN</b> safeguards and security for Hanford Site access.</p>	<p><b>WASTE TREATMENT</b></p> <p>Start treatment of tank waste. <b>OPERATING</b> the Waste Treatment and Immobilization Plant (WTP) via Direct-Feed Low-Activity Waste (DFLAW) to vitrify tank waste into a stable glass form for disposal. <b>MANAGE</b> secondary liquid waste and solid wastes generated in the treatment processes. <b>CHARACTERIZE</b> waste generated from remedial actions for treatment and disposal. <b>EXPLORE</b> opportunities for alternate treatment and disposition pathways.</p>	<p><b>RISK REDUCTION</b></p> <p><b>CLEAN UP</b> Central Plateau and River Corridor waste sites and <b>DEMOLISH</b> facilities to support decisions that are protective of ongoing groundwater remedial actions. <b>MINIMIZE</b> the footprint requiring extensive surveillance and maintenance activities. Safely <b>STORE</b> tank waste until it can be transferred to treatment facilities and <b>PROCEED</b> to closure of waste management areas.</p>	<p><b>WASTE DISPOSITION</b></p> <p><b>MANAGE</b> the interim storage of K Basins sludge, cesium/strontium capsules (Cs/Sr), loaded ion exchange columns, spent nuclear fuel and transuranic wastes until final decisions regarding their treatment and/or disposition are <b>ESTABLISHED</b> while <b>OVERSEEING</b> disposal facilities (i.e., Environmental Restoration Disposal Facility (ERDF), Integrated Disposal Facility (IDF) and State-Approved Land Disposal Site) operations.</p>	<p><b>LONG-TERM STEWARDSHIP TRANSITION</b></p> <p>geographic areas where facility demolition and waste site remediation activities are complete to a surveillance and maintenance program, ensuring long-term protection of human health and safety and environmental resources. <b>PERFORM</b> institutional controls monitoring and performance reporting in support of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) 5 year reviews.</p>
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## MAJOR COMPONENTS OF THE HANFORD SITE CLEANUP MISSION

### TANK WASTE CLEANUP

- Located within the Inner Area of the Central Plateau (approximately 10 square miles)
- Contains 177 underground storage tanks in 12 single-shell tank (SST) farms and 6 double-shell tank (DST) farms
- Safely managing tank waste until retrieved for treatment
- Initiating tank waste treatment via DFLAW no later than fiscal year 2024 (FY2024), then transitioning to high-level waste and supplemental low-activity waste treatment
- Staging and conditioning waste to meet treatment facilities' waste acceptance criteria
- Retrieving waste from SSTs into DSTs (many SSTs have or are suspected to have leaked in the past)

### CENTRAL PLATEAU CLEANUP

- Approximately 75 square miles in the central portion of the Hanford Site
- Contains 15 soil, 6 legacy processing facilities and 4 groundwater operable units
- Ongoing groundwater pump-and-treat operations
- Remediating hundreds of contaminated waste sites and demolishing facilities
- Operating on-site waste disposal facilities

### RIVER CORRIDOR CLEANUP

- Approximately 220 square miles in proximity to the Columbia River
- Contains 20 soil and 6 groundwater operable units
- Remediating final waste sites and demolishing facilities
- Ongoing active groundwater remediation (pump-and-treat and sequestration)
- Transition remediating geographic areas to Long-Term Stewardship



**ENABLING ASSUMPTIONS**

- Annual funding of approx. \$2.6 billion
- Timeliness of regulatory permits
- COVID-19 affects and force majeure not fully incorporated



REV. 3 DRAFT (10/11/2021)



# Hanford 5-Year Plan Placemat (cont.)

THE HANFORD SITE

Timeframes and accomplishments assume ~ \$2.6 billion annual funding profile

## FY2021

### CRITICAL ACTIVITIES:

#### TANK WASTE

- ✓ Transition All WTP Lab, Low-Activity Waste (LAW) and Balance of Facilities Systems to Commissioning (Excluding EMF)
- ✓ Complete Tank-Side Cesium Removal (TSOR) Readiness to Operate
- ✓ Complete Effluent Management Facility (EMF) Construction
- ✓ Complete Scheduled Liquid Effluent Retention Facility (LERF) / Effluent Treatment Facility (ETP) DFLAW Upgrades
- ✓ Complete Construction on TX Farm Surface Barrier

#### CENTRAL PLATEAU

- ✓ Complete Capsule Storage Area Construction
- ✓ Complete Plutonium-Uranium Extraction (PUREX) Facility Removal Action Work Plan
- ✓ Complete 200 East Area Sewer Consolidations
- ✓ Complete Overlay of Interior 200 East Area Roads
- ✓ Complete Fire Protection Infrastructure for Central Plateau Raw Water
- ✓ Install Mobile Office Trailers 200 East Area (Emergent COVID Work)

#### RIVER CORRIDOR

- ✓ Complete K West Basin Garnet and Sand Filter Removal
- Submit 100-BC Area Remedial Design Report / Remedial Action Work Plan for Regulatory Review

- ✓ COMPLETE
- CARRYOVER

## FY2022

### CRITICAL ACTIVITIES:

#### TANK WASTE

- Complete AX-102 and AX-104 SST Retrievals (Consent Decree Milestone B-3)



- Initiate TSOR Operations [increases]
- Complete WTP Loss of Power Testing
- Complete WTP Water Run
- Complete First LAW Facility Melter Heat-Up
- Initiate LAW Facility Cold Commissioning with Simulated Tank Waste
- Initiate Second LAW Facility Melter Heat-Up
- Complete 12-inch Potable Water Line Loop to WTP

#### CENTRAL PLATEAU

- Complete PUREX North Facility Complex Demolition
- Implement 200-BP-5 / 200-PO-1 Interim Record of Decision (ROD)

#### RIVER CORRIDOR

- Complete Garnet Filter / Sand Filter Media Transfer to T Plant
- Complete Installation of 7 Micropiles at 324 Building to Support Waste Site 300-296 Remote Excavation

## FY2023

### DFLAW Hot Commissioning (WTP)



### CRITICAL ACTIVITIES:

#### TANK WASTE

- Complete LAW Facility Operational Readiness Review to Authorize Hot Commissioning
- Initiate IDF Operations
- Commence Hot Commissioning of WTP LAW Facility and EMF [increases]
- Resume 242-A Evaporator Operations
- Complete LERF Basin 41 Construction

#### CENTRAL PLATEAU

- Complete IDF Upgrades & Readiness Reviews Required for Operations
- Complete 2248 Facility Demolition Preparation
- Complete PUREX North Facility RCRA Tank Closures
- Complete 400 Area Fire Station
- Complete Raw Water Cross Connection Isolations

#### RIVER CORRIDOR

- Complete 105KE Reactor ISS
- Complete Installation of 324 Building Micropiles to Support Waste Site 300-296 Remote Excavation
- Complete 100 Area Mission Critical Distribution Feeders
- Complete 300 Area Lighting Along Route 4S

## FY2024

### CRITICAL ACTIVITIES:

#### TANK WASTE

- Initiate LAW Waste Treatment Operations
- Central Plateau Water Treatment Facility Operational
- Implement West Area Risk Management
- Complete AX Farm Retrievals
- Initiate A Farm Retrieval
- Complete Construction on U Farm Surface Barrier

#### CENTRAL PLATEAU

- Complete Waste Encapsulation Storage Facility Modifications Construction
- Replace 200 West Area 1.1 Million Gallon Potable Water Tank
- Complete 2312 Facility Demolition Preparation
- Complete REDOX Annex Demolition
- Eliminate All IT Services from Gable Mountain - West
- Complete Upgrade of the Site Business Management System



#### RIVER CORRIDOR

- Complete K West Basin Characterization and Dewatering
- Initiate K West Basin Demolition [increases]
- Obtain 100-K Area ROD

## FY2025

### Construction of the High-Level Waste Facility



### CRITICAL ACTIVITIES:

#### TANK WASTE

- DFLAW Operations Ramp Up Treatment Throughput
- Initiate Activation of Cross-Site Transfer System
- Complete 230KV Transmission System Reconditioning
- Resume WTP High-Level Waste Facility Construction [increases]

#### CENTRAL PLATEAU

- Initiate Transfer of Cs / Sr Capsules to Capsule Storage Area
- Initiate 2248 & 2312 Facility Demolition
- Initiate PUREX Removal Actions
- Complete Closure of 276S Hexone Tanks
- Expand Route 4S and Rebuild Routes 2S & 11A
- Complete Construction of Fleet Maintenance Complex

#### RIVER CORRIDOR

- Complete Waste Site 300-296 Remote Excavation
- Obtain 100-N Area ROD

## FY2026

### CRITICAL ACTIVITIES:

#### TANK WASTE

- Continue DFLAW Operations
- Initiate Infrastructure Upgrades for Next Tank Farm Retrievals
- Initiate Tank Farm Upgrades for HLW Processing



#### CENTRAL PLATEAU

- Complete Cs / Sr Capsule Transfers to Dry Storage [increases]
- Complete Removal of All Mixed Waste Containers from Outside Storage Areas A & B
- Initiate 2247 Facility Deactivation
- Complete Construction of EROF Supercell 11
- Complete Sanitary Water Cross-Tie Between 200E & 200W
- Replace 200 East Area 1.1 Million Gallon Potable Water Tank
- Replace 2101M Warehouse

#### RIVER CORRIDOR

- Complete K West Basin Demolition
- Replace 1810 Vertical Turbine Pumps
- Initiate Waste Site Remediation Per Final RODs

## PACE OF OPERATIONS

### ONE HANFORD TRANSITION

As cleanup progresses, the Site will transition to an integrated "One Hanford" approach to operations. The pace of the mission will increase and expand to 24 / 7 operations to support tank waste treatment. Coordinated planning and execution will define success.



### DIRECT FEED LOW-ACTIVITY WASTE

The WTP's new DFLAW program is the first of many long-term cleanup activities that will be employed at Hanford. Hot commissioning will begin in 2023, initiating an exciting new phase of the Hanford cleanup mission.



### ESSENTIAL SERVICES

The Hanford Site will transition to decades of 24 / 7 operations. This will affect how essential services will continue to be safely and flexibly delivered with the right level of rigor and robustness. Today, nearly 200 infrastructure / service upgrade projects are prioritized and are being planned through FY2026 to support the pace of operations. Currently, WTP utilizes 42 site services and will progress up to 76 services with 27 required during 24 / 7 operations.



### THE FUTURE OF CLEANUP

By FY2026, Tank Waste treatment will ramp up toward producing 21 metric tons of glass (MTG) / day for disposal at IDF, retrieve six additional SSTs and resume construction on the HLW Vitrification Facility.

Central Plateau cleanup will have completed the transfer of Cs / Sr capsules to dry storage, reduced risk / mortgage cost for several aging facilities, and treated approximately 5 billion gallons of groundwater.

River Corridor cleanup will have obtained final 100-BC, 100-N and 100-K RODs, completed remedial actions in 100-K, and treated approximately 5 billion gallons of groundwater. This scope safely, efficiently and effectively reduces risk and progresses the Hanford Site cleanup mission.

## TANK WASTE



- ✓ Transition All WTP Lab, Low-Activity Waste (LAW) and Balance of Facilities Systems to Commissioning (Excluding EMF)
- ✓ Complete Tank-Side Cesium Removal (TSCR) Readiness to Operate
- ✓ Complete Effluent Management Facility (EMF) Construction
- ✓ Complete Scheduled Liquid Effluent Retention Facility (LERF) / Effluent Treatment Facility (ETF) DFLAW Upgrades
- ✓ Complete Construction on TX Farm Surface Barrier

✓ Complete

&gt; Carryover

## CENTRAL PLATEAU



- ✓ Complete Capsule Storage Area Construction
- ✓ Complete Plutonium-Uranium Extraction (PUREX) Facility Removal Action Work Plan
- ✓ Complete 200 East Area Sewer Consolidations
- ✓ Complete Overlay of Interior 200 East Area Roads
- > Complete Fire Protection Infrastructure for Central Plateau Raw Water
- ✓ Install Mobile Office Trailers 200 East Area (Emergent COVID Work)

## RIVER CORRIDOR



- ✓ Complete K West Basin Garnet and Sand Filter Removal
- > Submit 100-BC Area Remedial Design Report / Remedial Action Work Plan for Regulatory Review



## TANK WASTE



- Complete AX-102 and AX-104 SST Retrievals (Consent Decree Milestone B-3)
- Initiate TSCR Operations [\[pictured\]](#)
- Complete WTP Loss of Power Testing
- Complete WTP Water Run
- Complete First LAW Facility Melter Heat-Up
- Initiate LAW Facility Cold Commissioning with Simulated Tank Waste
- Initiate Second LAW Facility Melter Heat-Up
- Complete 12-inch Potable Water Line Loop to WTP

## CENTRAL PLATEAU



- Complete PUREX North Facility Complex Demolition
- Implement 200-BP-5 / 200-PO-1 Interim Record of Decision (ROD)

## RIVER CORRIDOR



- Complete Garnet Filter / Sand Filter Media Transfer to T Plant
- Complete Installation of 7 Micropiles at 324 Building to Support Waste Site 300-296 Remote Excavation



TSCR & Ion-Exchange Storage Pad Near AP Farm



## TANK WASTE



- Complete LAW Facility Operational Readiness Review to Authorize Hot Commissioning
- Initiate IDF Operations
- Commence Hot Commissioning of WTP LAW Facility and EMF [pictured]
- Resume 242-A Evaporator Operations
- Complete LERF Basin 41 Construction

## CENTRAL PLATEAU



- Complete IDF Upgrades & Readiness Reviews Required for Operations
- Complete 224B Facility Demolition Preparation
- Complete PUREX North Facility RCRA Tank Closures
- Complete 400 Area Fire Station
- Complete Raw Water Cross Connection Isolations

## RIVER CORRIDOR



- Complete 105KE Reactor ISS
- Complete Installation of 324 Building Micropiles to Support Waste Site 300-296 Remote Excavation
- Complete 100 Area Mission Critical Distribution Feeders
- Complete 300 Area Lighting Along Route 4S

*DFLAW Hot Commissioning (WTP)*

## TANK WASTE



- Initiate LAW Waste Treatment Operations
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- Complete Construction on U Farm Surface Barrier

## CENTRAL PLATEAU



- Complete Waste Encapsulation Storage Facility Modifications Construction
- Replace 200 West Area 1.1 Million Gallon Potable Water Tank
- Complete 231Z Facility Demolition Preparation
- Complete REDOX Annex Demolition
- Eliminate All IT Services from Gable Mountain - West
- Complete Upgrade of the Site Business Management System

## RIVER CORRIDOR



- Complete K West Basin Characterization and Dewatering
- Initiate K West Basin Demolition [\[pictured\]](#)
- Obtain 100-K Area ROD





## TANK WASTE



- DFLAW Operations Ramp Up Treatment Throughput
- Initiate Activation of Cross-Site Transfer System
- Complete 230kV Transmission System Reconditioning
- Resume WTP High-Level Waste Facility Construction [\[pictured\]](#)

Construction of the High-Level Waste facility



## CENTRAL PLATEAU



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## RIVER CORRIDOR



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## TANK WASTE



- Continue DFLAW Operations
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## CENTRAL PLATEAU



- Complete Cs / Sr Capsule Transfers to Dry Storage [\[pictured\]](#)
- Complete Removal of All Mixed Waste Containers from Outside Storage Areas A & B
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- Complete Construction of ERDF Supercell 11
- Complete Sanitary Water Cross-Tie Between 200E & 200W
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## RIVER CORRIDOR



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- Initiate Waste Site Remediation Per Final RODs

Cesium/Strontium capsules to dry storage



The Department is soliciting feedback on the 5-Year Plan through a survey that is open through Nov. 22. The Department will share the survey results in the future.

Please complete the survey by Nov. 22 at <https://forms.office.com/g/SCzizF5QwJ>.

More information, including the Hanford 5-Year Plan, is available on the Hanford at website at <https://go.usa.gov/xMHkq>.

Questions? Please email [5YearPlan@rl.gov](mailto:5YearPlan@rl.gov).



# Questions?

The Hanford Reach  
White Bluffs Overlooking the Columbia River